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969	Title The distribution and status of ruffed grouse in Indiana: 25 years of decline.	10/16/08

Abstract: *The distribution of ruffed grouse (*Bonasa umbellus*) in Indiana has historically fluctuated with changing land use. In 1931, ruffed grouse occurred in only 12 counties. Following reforestation, natural range expansion and successful restoration efforts, the grouse distribution expanded to 41 counties in 1983, the widest distribution since 1856. A reassessment of grouse distribution in Indiana was initiated in 2008 using reports of ruffed grouse made during the last 5 years. Compared to the 1983 distribution, it is highly probable that ruffed grouse are now extirpated from 15 counties and likely to exceed 25 counties within a few years if no major forest disturbance occurs. Preliminary data from the Indiana Breeding Bird Atlas (2005-2010) indicate ruffed grouse occurred in less than 1% of the priority blocks surveyed compared to 10% for the same blocks during the 1985-1990 atlas.*

The distribution of ruffed grouse in Indiana has historically fluctuated with changing land use. In 1931, ruffed grouse occurred in only 12 counties. Following reforestation, natural range expansion and successful restoration efforts, the grouse distribution expanded to 41 counties in 1983, the widest distribution since 1856 (Backs 1984). Forest succession continued to advance as did increased public opposition to timber harvests on public lands. Ruffed grouse populations have declined to very low levels based on “drumming” surveys and hunter harvest records (Backs 2008). The 5-year (2004-2008) mean drumming index of 0.04 drummers per stop in the primary grouse range is 96% less than 25 years ago ($DI = 0.89$; 1979-1983; $P < 0.01$) and is the lowest level recorded since the 1940’s. During the same 5-year periods, spring grouse densities estimated from “activity center” counts have gone from 4.4 birds/40 ha to 0.1 birds/40 ha on the Maumee Grouse Study Area ($P < 0.01$), with no birds detected the last 3 springs.

A reassessment of the ruffed grouse distribution in Indiana was initiated in 2008 by soliciting various natural resource agency professionals (active and recently retired), consulting foresters, and checking public bird databases for records of ruffed grouse made during the last 5 years. A region specific survey form with a township map was sent to potential participants in those regions of the state where existing grouse occurrence data was lacking. Participants were requested to indicate on the maps included in the survey form those places or political townships where they had either observed or heard ruffed grouse or had heard reliable reports of ruffed grouse occurrence within the last 5 years. Participants were also asked to indicate those townships for which they were relatively certain ruffed grouse no longer existed. Space was also provided for recording additional remarks concerning bird numbers and time of year of observations. Unsolicited grouse occurrence data were gleaned by querying various types of publicly available, bird observation records (e.g., Breeding Bird Surveys, Audubon Christmas Bird and May Day counts, and web-based birding list-serves) along with preliminary data from the ongoing Indiana Breeding Bird Atlas (2005-2010).

Nearly 200 grouse observation-distribution survey forms were sent with responses received from 144 natural resource professionals. “No-observation” reports were received from 51% of the respondents with 49% reporting “positive occurrence” observations either in their region of responsibility or other regions of the state. Queries of the public bird observation records and Breeding Bird Survey data did not yield any other reliable grouse observations outside the areas of already known grouse occurrence. Comparable blocks from the 1985-1990 Indiana Breeding Bird Atlas were compared to similar blocks already surveyed during the ongoing 2005-2010 Atlas. All observation reports were compiled and compared for any conflicting occurrence reports. The conflicting reports, remarks, and drumming survey data were used to help devise a

relative subjective assessment of “conservation status” adapted for ruffed grouse in Indiana from Flather et al. (2008). The compilation of information was then manually transferred to a map of Indiana with the level of at least political township resolution.

Compared to the 1983 distribution, it is highly probable that ruffed grouse are now extirpated from 15 of 41 counties and extirpation is likely to exceed 25 counties within a few years if no major forest disturbance occurs (Figure 1). No areas of the state were considered to have “secure” or “apparently secure” populations of ruffed grouse. Much of the areas classed as “vulnerable” represented grouse populations that had responded to habitat generally created within the prior 15 years by wind storms and subsequent timber salvage cuts. Preliminary data from the Indiana Breeding Bird Atlas (2005-2010) indicate ruffed grouse occur in less than 1% of the priority blocks surveyed compared to 10% for the same blocks during the 1985-1990 atlas effort.

A population model analysis for ruffed grouse in Indiana projects that ruffed grouse will not exist at viable population levels within the next decade on the Hoosier National Forest under current trends in forest succession and management (McCreedy and Basile 2004). Based on similar trends in grouse populations, forest succession, and land management, a similar fate probably faces ruffed grouse on adjacent public and private forestlands in south-central Indiana. The Knob’s sampling unit of the Continuous Forest Inventory for Indiana (Miles 2008) generally covers the primary distribution of ruffed grouse in south-central Indiana (Backs 1984). The proportion of seedling/sapling and pole timber components have progressively declined as they have matured into larger, more open saw log sized forests. Habitat for ruffed grouse is found primarily in stands composed of the seedling to pole size hardwoods (see Backs 2008 for an illustration).

Early forest successional stages of seedling/sapling/pole size hardwoods are the primary components of habitat for ruffed grouse, American woodcock (*Scolopax minor*) and a host of other wildlife species that were historically created by either natural disturbances (e.g. tornadoes, fire storms, insect outbreaks) across a large continuous forested landscape or within transitional zones between grasslands and forests. Early forest successional habitats and associated wildlife are undergoing significant and parallel declines in the eastern United States (See a series of papers in “Conservation of woody, early successional habitats and wildlife in the eastern United States” pages 407-494, Wildlife Society Bulletin Vol. 29, No. 2, Summer 2001). The population trends for American woodcock are nearly identical to those of ruffed grouse in Indiana (Kelley and Rau, 2006).

Ruffed grouse exist on both private and public forest lands. Private forest land ownerships in Indiana are generally small with quite varying land management objectives and parcel ownership is relatively short to allow long term, consistent timber management that would benefit ruffed grouse. Public forest lands are relatively continuous and offer the best opportunities for long term land management objectives. Until public land managers again have the flexibility to use various vegetation or timber management tools to mimic or emulate natural disturbances on what remains of the contiguous forest ecosystem, we can expect further losses in early successional habitats and dependent wildlife species on public forest lands. Public acceptance of timber harvesting will require an extensive education effort to create an “ecological awareness” of the need for this declining forest community type. Ruffed grouse population levels are projected to drop below “viable population levels” within the next decade, or sooner, in portions of their existing range in south-central Indiana unless some intervention (e.g. timber harvests of sufficient intensity) or sizable natural disturbances



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occur across the forested landscape to create early succession and young forest habitats. Ruffed grouse are a representative species of a large group of wildlife whose habitat needs are often lost in the fog of the public's desire for big tree forests.

Appreciation is extended to all the natural resource professionals across state, federal, and private sectors who took the time to respond and provide useful remarks concerning populations of ruffed grouse.

Literature Cited

- Backs, S.E. 1984. The historic and present distribution of ruffed grouse in Indiana. *Proceedings of the Indiana Academy of Science*. Volume 93:161-166.
- _____. 2008. 2008 Spring Breeding Indices of Ruffed Grouse. *Wildlife Management and Research Notes* No. 955. Indiana Department of Natural Resources, Indianapolis.
- Flather, C.H., M.S. Knowles, and J. McNees. 2008. Geographic patterns of at-risk species: a technical document supporting the USDA Forest Service Interim update of the 2000 RPA Assessment. Gen Tech. Rep. RMRS-GTR-211. Fort Collins, CO. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Kelley, J.R. Jr., and R. D. Rau. 2006. American woodcock population status, 2006. U.S. Fish and Wildlife Service, Laurel Maryland. 15 pp.
- McCreedy, C. D. and C. M. Basile. 2004. Early successional forest management proposal; submitted for the consideration of the Hoosier National Forest Land and Resource Management Plan Revision Team, November 4, 2004. US Department of Agriculture, Forest Service Hoosier National Forest, Bedford, IN. 15 pp.
- Miles, Patrick D. Apr-30-2008. Forest inventory mapmaker web-application version 2.1. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. [Available only on internet: www.ncrs2.fs.fed.us/4801/fiadb/index.htm]



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Figure 1.

